

CLAIMS

What is claimed is:

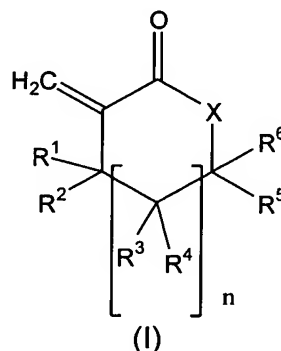
1. A composition comprising,

(a) an α -methylene lact(one)(am) copolymer comprising,

- 5 (i) at least one α -methylene lact(one)(am) monomer of Formula I, and
(ii) at least one other free radically copolymerizable monomer, and

(b) a filler,

10 provided that no more than 95 mole percent and not less than 1 mole percent of repeat units in said α -methylene lact(one)(am) copolymer are derived from said α -methylene lact(one)(am) monomer,



wherein:

n is 0, 1 or 2;

X is $-O-$ or $-NR^9-$; and

15 R¹, R², R⁵, R⁶, each of R³ and each of R⁴, are independently hydrogen, a functional group, hydrocarbyl or substituted hydrocarbyl, and
20 R⁹ is a hydrocarbyl or a substituted hydrocarbyl.

2. A composition comprising an α -methylene lact(one)(am) homopolymer, and from 5% to 80% by weight of a filler, based on the total weight of said homopolymer and said filler.

25 3. A composition comprising the α -methylene lact(one)(am) copolymer of Claim 1 and from 5% to 80% by weight of a filler, based on the total weight of said copolymer and said filler.

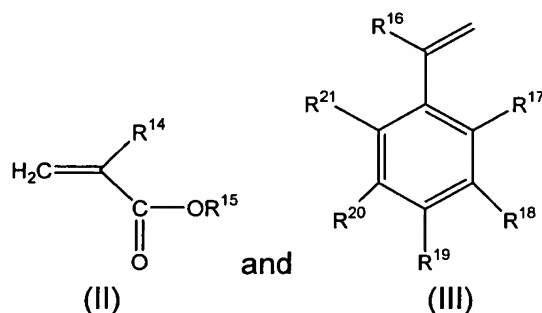
30 4. A composition comprising an α -methylene lact(one)(am) homopolymer and at least 10% by weight of alumina trihydrate based on the total weight of said homopolymer and said alumina trihydrate.

5. A composition comprising the α -methylene lact(ane)(am) copolymer of Claim 1 and at least 10% by weight of alumina trihydrate based on the total weight of said copolymer and said alumina trihydrate.

6. The composition as recited in Claim 1 wherein R^1 , R^2 , R^3 , R^4 , R^5 and R^6 are all independently hydrogen or alkyl containing 1 to 6 carbon atoms, and X is oxygen.

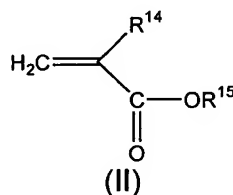
7. The composition as recited in Claim 1 wherein n is 0.

8. The composition as recited in Claim 1 wherein the free radically copolymerizable monomer comprises at least one of acrylonitrile, methacrylic acid, compounds of Formula II and compounds of Formula III,



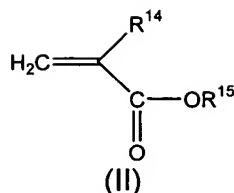
wherein R^{14} is hydrogen or methyl, R^{15} is hydrocarbyl or substituted hydrocarbyl, and R^{16} is hydrogen or methyl, and R^{17} , R^{18} , R^{19} , R^{20} and R^{21} are each independently hydrogen, hydrocarbyl substituted hydrocarbyl or a functional group.

9. The composition as recited in Claim 3 wherein the free radically copolymerizable monomer of Claim 1 is the compound of Formula II,



wherein R^{14} is hydrogen or methyl, and R^{15} is hydrocarbyl or substituted hydrocarbyl.

10. The composition as recited in Claim 5 wherein the free radically copolymerizable monomer is the compound of Formula II,



wherein R¹⁴ is hydrogen or methyl, and R¹⁵ is hydrocarbyl or substituted hydrocarbyl.

11. A composition comprising, at least one α-methylene lact(one)(am), a free radically copolymerizable monomer, an inorganic filler, and optionally a free radical initiator.

12. The composition of Claim 1 wherein the copolymer is crosslinked.

13. The composition of Claim 2 wherein the homopolymer is crosslinked.

14. The composition of Claim 3 wherein the copolymer is crosslinked.

15. 15. The composition of Claim 4 wherein the homopolymer is crosslinked.

16. The composition of Claim 5 wherein the copolymer is crosslinked.

17. The composition of Claim 11 wherein the copolymer is crosslinked.

18. The composition of Claim 1 in the form of a sheet or a molded article.

19. The composition of Claim 2 in the form of a sheet or a molded article.

20. 20. The composition of Claim 3 in the form of a sheet or a molded article.

21. The composition of Claim 4 in the form of a sheet or a molded article.

22. The composition of Claim 5 in the form of a sheet or a molded article.

23. The composition of Claim 11 in the form of a sheet or a molded article.

24. The composition of Claim 1 in the form of a solid surface material used as a decorative surface.

25. 25. The composition of Claim 2 in the form of a solid surface material used as a decorative surface.

26. The composition of Claim 3 in the form of a solid surface material used as a decorative surface.

27. The composition of Claim 4 in the form of a solid surface material used as a decorative surface.

5 28. The composition of Claim 5 in the form of a solid surface material used as a decorative surface.

29. The composition of Claim 11 in the form of a solid surface material used as a decorative surface.

10 30. The composition of Claim 1 in the form of a kitchen top, counter top, table top, bathroom counter top, a wall covering, a kitchen sink, a bathroom sink, or a bathtub.

31. The composition of Claim 2 in the form of a kitchen top, counter top, table top, bathroom counter top, a wall covering, a kitchen sink, a bathroom sink, or a bathtub.

15 32. The composition of Claim 3 in the form of a kitchen top, counter top, table top, bathroom counter top, a wall covering, a kitchen sink, a bathroom sink, or a bathtub.

20 33. The composition of Claim 4 in the form of a kitchen top, counter top, table top, bathroom counter top, a wall covering, a kitchen sink, a bathroom sink, or a bathtub.

34. The composition of Claim 5 in the form of a kitchen top, counter top, table top, bathroom counter top, a wall covering, a kitchen sink, a bathroom sink, or a bathtub.

25 35. The composition of Claim 11 in the form of a kitchen top, counter top, table top, bathroom counter top, a wall covering, a kitchen sink, a bathroom sink, or a bathtub.

36. A solid surface material exhibiting antimicrobial effectiveness, the solid surface material comprising the composition of Claim 1.

30 37. A solid surface material exhibiting antimicrobial effectiveness, the solid surface material comprising the composition of Claim 2.

38. A solid surface material exhibiting antimicrobial effectiveness, the solid surface material comprising the composition of Claim 3.

39. A solid surface material exhibiting antimicrobial effectiveness, the solid surface material comprising the composition of Claim 4.

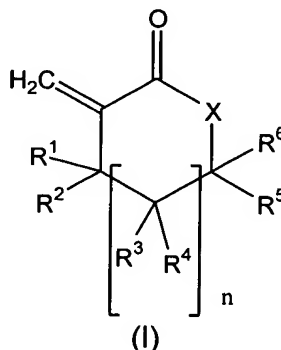
35 40. A solid surface material exhibiting antimicrobial effectiveness, the solid surface material comprising the composition of Claim 5.

41. A solid surface material exhibiting antimicrobial effectiveness, the solid surface material comprising the composition of Claim 11.

42. A process for manufacturing a plastic article, comprising the step of contacting

- (a) one or more acrylate or methacrylate esters,
- (b) one or more α -methylene lact(one)(am) monomers of Formula I,

5



wherein:

10

n is 0, 1 or 2;

X is $-O-$ or $-NR^9-$; and

R^1 , R^2 , R^5 , R^6 , each of R^3 and each of R^4 , are independently hydrogen, a functional group, hydrocarbyl or substituted hydrocarbyl, and R^9 is a hydrocarbyl or a substituted hydrocarbyl

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(c) one or more free radical initiators,

(d) at least 10 weight percent of a filler based on total weight of the

said homopolymer or copolymer and the filler,

(e) optionally one or more homopolymers or copolymers of acrylate

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and/or methacrylate esters,

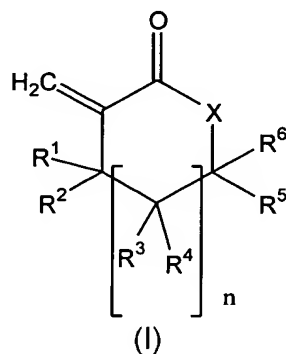
said contacting being at a temperature sufficient to cause said free radical initiator to generate free radicals; and wherein the α -methylene lact(one)(am) monomer of Formula I is at least 1 mole percent of the total composition of (a) and (b).

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43. A process for manufacturing a plastic article, comprising the step of contacting

- (a) one or more acrylate or methacrylate esters,
- (b) one or more α -methylene lact(one)(am) monomers of Formula I,

30



wherein:

n is 0, 1 or 2;

5 X is -O- or -NR⁹-; and

R¹, R², R⁵, R⁶, each of R³ and each of R⁴, are independently hydrogen, a functional group, hydrocarbyl or substituted hydrocarbyl, and R⁹ is a hydrocarbyl or a substituted hydrocarbyl

(c) at least one free radical initiator

10 (d) at least 10 weight percent of alumina trihydrate based on total weight of the said homopolymer or copolymer and alumina trihydrate,

(e) optionally one or more homopolymers or copolymers of acrylate and/or methacrylate esters,

15 said contacting being at a temperature sufficient to cause said free radical initiator to generate free radicals; and wherein the α -methylene lact(one)(am) monomers of Formula I is at least 1 mole percent of the total composition of (a) and (b).

44. The process of Claim 42, further comprising using the plastic
20 article as a decorative surface.

45. The process of Claim 43, further comprising using the plastic article as a decorative surface.